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**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

Applicant: Steve Van Kirk  
Title: SIGNAL MEASUREMENT APPARATUS AND METHOD

Docket No.: 303.758US1  
Filed: August 30, 2001  
Examiner:

Serial No.: 09/945,309  
Due Date: November 30, 2001  
Group Art Unit: 2858

Commissioner for Patents  
Washington, D.C. 20231

We are transmitting herewith the following attached items (as indicated with an "X"):

- ☒ A return postcard.
- ☒ A Preliminary Amendment (4 Pages).
- ☒ A Clean Version of Specification Paragraphs (2 pgs.).
- ☒ A Clean Version of Abstract (1 pg.).

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S/N 09/945,309

PATENT

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PRELIMINARY AMENDMENT

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Washington, D.C. 20231

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Before taking up the above-identified application for examination, please enter the following amendments.

IN THE SPECIFICATION

Please make the paragraph substitutions indicated in the appendix entitled Clean Version of Amended Specification Paragraphs. The specific changes incorporated in the substitute paragraphs are shown in the following marked-up versions of the original paragraphs:

**The paragraph beginning on page 13, line 16 is amended as follows:**

After the voltage difference  $V_{gnd}$  is presented to the measurement circuit input 440, several possibilities exist with regard to measurement and further processing. For example, the measurement circuit 415 may include a comparison circuit 445, which provides a differential value to an analog-to-digital converter 450. The resulting digital signal value may then be sent directly to one or more output terminals 470 for access by the operator or designer of the integrated circuit 410. Alternatively, the measurement circuit may include an analog-to-digital converter 445 which feeds into a digital-to-analog converter 450. Then, the resulting analog signal can be sent directly to one or more output terminals 470 for access by the operator of the integrated circuit 410. In either case, several advantages are readily obtained by making use of the circuitry and methods of the present invention. First, accuracy is increased because measurements are made directly on-chip, without the added parasitic inductance and capacitance introduced by off-chip probing of a surrounding integrated circuit package. Second, measurement of the voltage  $V_{gnd}$  can be carried out without the need for special external equipment, since the analog parameters of the circuit 410 can be characterized during manufacture, and external measurement equipment probes can be further isolated from the